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SYSTEMATIC DESIGN OF MICROSTRUCTURES BY TOPOLOGY OPTIMIZATION

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Abstract

The topology optimization method can be used to determine the material distribution in a design domain such that an objective function is maximized and constraints are fulfilled. The method which is based on Finite Element Analysis may be applied to all kinds of material distribution problems like extremal material design, sensor and actuator design and MEMS synthesis. The state-of-the-art in topology optimization will be reviewed and older as well as new applications in phononic and photonic crystals design will be presented.